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The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 21

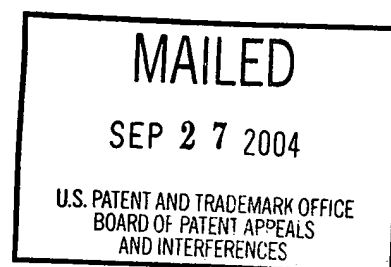
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

*Ex parte* VIVEK K. GOYAL, JELENA KOVACEVIC, and FRANCOIS MASSON

Appeal No. 2004-0004  
Application No. 09/698,437

ON BRIEF



Before KRASS, GROSS, and BARRY, *Administrative Patent Judges*.  
GROSS, *Administrative Patent Judge*.

**DECISION ON APPEAL**

This is a decision on appeal from the examiner's final rejection of claims 1 through 7, 10 through 18, 21, and 22. Claims 8, 9, 19, and 20 have been indicated as containing allowable subject matter.

Appellants' invention relates to a method of processing a signal for transmission in a wireless communication system. The method includes encoding the signal in a multiple description coder, arranging the different descriptions into packets, and transmitting the packets using a frequency modulator. Claim 1 is illustrative of the claimed invention, and it reads as follows:

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1. A method of processing a signal for transmission in a wireless communication system, the method comprising the steps of:

encoding the signal in a multiple description coder which generates a plurality of different descriptions of a given portion of the signal;

arranging the different descriptions of the given portion of the signal into packets such that at least a first description of the given portion is placed in a first packet and a second description of the given portion is placed in a second packet; and

transmitting each of the packets using a frequency hopping modulator, wherein a hopping rate of the modulator is configured based at least in part on a number of descriptions generated for each of a plurality of different portions of the signal.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Saleh et al. (Saleh)                      5,048,057                      Sep. 10, 1991

Vinay Anant Vaishampayan, "Design of Multiple Description Scalar Quantizers," IEEE Transactions on Information Theory, Vol. 39, No. 3 (May 1993), pp. 821-34. (Vaishampayan)

Ajay Ingle et al., "DPCM System Design for Diversity Systems With Applications to Packetized Speech," IEEE Transactions on Speech and Audio Processing, Vol. 3, No. 1, (January 1995), pp. 48-57. (Ingle)

Michael Fleming et al., "Generalized Multiple Description Vector Quantization," DCC'99 Data Compression Conference (March 29-31, 1999), pp. 3-12. (Fleming)

Claims 1, 2, 4, 7, 10 through 13, 15, 18, 21, and 22 stand rejected under 35 U.S.C. § 103 as being unpatentable over Fleming in view of Saleh.

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Claims 3 and 14 stand rejected under 35 U.S.C. § 103 as being unpatentable over Fleming in view of Saleh and Ingle.

Claims 5 and 16 stand rejected under 35 U.S.C. § 103 as being unpatentable over Fleming in view of Saleh and Vaishampayan.

Claims 6 and 17 stand rejected under 35 U.S.C. § 103 as being unpatentable over Fleming in view of Saleh and "well known prior art."

Reference is made to the Examiner's Answer (Paper No. 14, mailed April 22, 2003) for the examiner's complete reasoning in support of the rejections, and to appellants' Brief (Paper No. 13, filed March 7, 2003) and Reply Brief (Paper No. 15, filed June 30, 2003) for appellants' arguments thereagainst.

#### **OPINION**

As a preliminary matter, we note that appellants indicate on page 4 of the Brief that the claims are not to stand or fall together. Specifically, appellants suggest the following six groups: I) claims 1, 2, 4, 7, 12, 13, 15, and 18, II) claims 10 and 21, III) claims 11 and 22, IV) claims 3 and 14, V) claims 5 and 16, and VI) claims 6 and 17. However, for each of groups IV through VI, which add Ingle, Vaishampayan, and "well known prior

art," respectively, to the rejection against independent claims 1 and 12, appellants merely state that the additional reference "fails to supplement the fundamental deficiencies of the proposed combination of Fleming and Saleh." Since appellants did not argue the combinability of the additional references nor provide any other separate arguments for patentability, we will treat claims 3, 14, 5, 16, 6, and 17 with the first group.

Accordingly, we will treat the claims according to the following three groups: I) 1 through 7 and 12 through 18, II) 10 and 21, and III) claims 11 and 22, with claims 1, 10, and 11, respectively, as representative.

We have carefully considered the claims, the applied prior art references, and the respective positions articulated by appellants and the examiner. As a consequence of our review, we will affirm the obviousness rejection of claims 1 through 7 and 12 through 18 and reverse the obviousness rejection of claims 10, 11, 21, and 22.

Regarding representative claim 1, appellants argue (Brief, page 6, and Reply Brief, page 2) that Fleming does not discuss a frequency hopping modulator and Saleh does not mention multiple descriptions. However, the rejection is under 35 U.S.C. § 103, with Saleh being used for frequency hopping and Fleming being

applied for multiple descriptions. Where an obviousness rejection is based on multiple references, the rejection cannot be overcome by attacking the references individually. **See In re Keller**, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Appellants further contend (Brief, page 6, and Reply Brief, pages 3-4) that the examiner has failed to provide a suggestion or motivation to combine, but instead relies upon impermissible hindsight. We disagree. Saleh discloses (column 1, lines 46-53) that transmitting information over a sequence of predefined hopping frequencies reduces the likelihood of loss and fading. Fleming (page 5) discusses methods of reducing packet loss effects and explains that multiple description coding allows for data to be recovered more accurately. Thus, as Fleming wants to reduce packet loss effects, and Saleh teaches that frequency hopping reduces loss, the motivation for combining the references derives from the references, not from impermissible hindsight.

Appellants argue (Brief, page 7) that there is no teaching or suggestion of configuring the hopping rate of the modulator based on the number of descriptions generated in the multiple description encoding. However, Saleh discloses (column 1, lines 54-64) that the information to be transmitted is divided into codewords each of which is divided into a number of signal

points, and the number of hopping frequencies equals the number of signal points. Saleh further explains (column 1, lines 49-51) that the "underlying theory of this approach is that loss and fading are not likely to occur over all frequencies at the same time." Applying Saleh's teachings as to frequency hopping to multiple description coding, for each portion of the signal, the skilled artisan would transmit each description over a different frequency with the expectation that loss and fading would not happen over all the frequencies at the same time such that at least one description would be recovered accurately. Further, this would mean that the number of frequencies, and thus the frequency hopping rate, would depend on the number of descriptions generated for each portion of the signal. Appellants should not underestimate the level of the skilled artisan. *See In re Sovish*, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985).

Appellants contend (Brief, page 8, and Reply Brief, pages 2-3) that the examiner's reliance on Saleh's statement that frequency hopping can be combined with "some form of conventional channel coding" is insufficient motivation to use multiple description coding with frequency hopping. However, Saleh teaches the benefits of frequency hopping and suggests that it

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may be used with various forms of coding, which would include multiple description coding. Therefore, it would have been obvious to the skilled artisan that the frequency hopping of Saleh could be advantageously combined with Fleming's multiple description coding. Saleh does not need to specifically mention multiple description coding for the two references to be combined, or the rejection would be an anticipation of the claimed invention.

Since appellants' arguments have not persuaded us of any error in the rejection of claim 1, we will sustain the obviousness rejection thereof. Further we will sustain the rejection of claims 2 through 7 and 12 through 18, grouped with claim 1.

As to claims 10 and 21, we reach the opposite conclusion. Representative claim 10 defines how the descriptions of various portions of the signal are to be packetized. Appellants argue (Brief, page 9) that the examiner fails to rely on any specific teachings or suggestions in the references for this limitation. We agree that neither Fleming nor Saleh suggests the particular packets recited in claim 10. Therefore, we cannot sustain the rejection of claims 10 and 21.

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Regarding claims 11 and 22, appellants assert that the portion of Saleh relied upon by the examiner discusses reducing the hopping rate, not the claimed limitation of selecting the hopping rate such that transmission delay is not increased. We agree. To maintain a particular transmission delay, the hopping rate would need to be increased, yet Saleh discloses decreasing the rate of switching from one frequency to another. Therefore, Saleh fails to teach or suggest the limitation of claim 11 and 22. Consequently, we cannot sustain the obviousness rejection of claims 11 and 22.

#### **CONCLUSION**

The decision of the examiner rejecting claims 1 through 7, 10 through 18, 21, and 22 under 35 U.S.C. § 103 is affirmed as to claims 1 through 7 and 12 through 18 and reversed as to claims 10, 11, 21, and 22.



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No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

**AFFIRMED-IN-PART**


*E. A. K.*

ERROL A. KRASS )  
Administrative Patent Judge )

Anita Pellman Gross

ANITA PELLMAN GROSS  
Administrative Patent Judge

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Joseph B. Ryan  
Ryan, Mason & Lewis, LLP  
90 Forest Avenue  
Locust Valley, NY 11560